

REMARKS

Claims 1-10, 14-16, and 18-48 were pending prior to this Response, with claims 5, 18-22, 29-33 and 41-48 having been withdrawn from further consideration. By the present communication, claims 1, 7, 9, and 28 have been amended, new claims 49-52 have been added, and claims 10, 15, 23, and 24 have been canceled without prejudice. The amendments do not add new matter and are fully supported by the specification and original claims. Support for the newly added claims may be found, among others, at paragraphs [0115], [0116], and Example 1 of the published application (US Pub. No. 2008/0124360). Accordingly, upon entry of this communication, claims 1-4, 6-9, 14, 16, 25-28, 34-40, and 49-52 will be under consideration.

Rejections under 35 U.S.C. §112, Second Paragraph

Applicant respectfully traverses the rejection of claims 7, 9, 10, 15, 23, 24 and 28 under 35 U.S.C. §112, second paragraph, as allegedly being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Applicant has canceled claims 10, 15, 23, and 24, rendering the rejection moot as to those claims.

The Office Action alleges that it is unclear what the further modifications in claim 7 are since claim 7 is the first to mention a capsid. In addition, the Office Action alleges that the metes and bounds of the term “modification” are unclear since numerous possibilities exist for modifying a protein. Without acquiescing to the reasoning offered by the Office, and in order to expedite prosecution of the instant application, Applicant has amended claim 7 to refer to a capsid that includes one or more modifications to the penton protein of the capsid thereby reducing or eliminating binding to a α_v integrin binding domain. Accordingly, Applicant respectfully submits that as amended, claim 7 clearly claims the invention that Applicant regards as the invention. Withdrawal of the rejection is respectfully requested.

The Office Action alleges that claim 9 is indefinite because it is unclear what is the metes and bounds of the phrase “at least a sufficient number of amino acids.” Without acquiescing to the reasoning offered by the Office, and in order to expedite prosecution of the instant

application, Applicant has amended claim 9 to recite wherein 16 to 61 contiguous N-terminal amino acids of SEQ ID NO. 32 are replaced by 16 to 61 contiguous N-terminal amino acids of the native fiber to target the particle to dendritic cells. Support for the amended claim language may be found at, among others, paragraph [0173] of the published application (US Pub. No. 2008/0124360). Accordingly, Applicant respectfully submits that as amended, claim 9 clearly claims the invention that Applicant regards as the invention. Withdrawal of the rejection is respectfully requested.

The Office Action alleges that claim 28 is indefinite because it is unclear what the vaccine is directed towards. Without acquiescing to the reasoning offered by the Office, and in order to expedite prosecution of the instant application, Applicant has amended claim 28 in recite that the vaccine is for stimulating CD8+ T cells in the subject. Support for the amended claim language may be found at, among others, paragraph [0510] of the published application (US Pub. No. 2008/0124360). Accordingly, Applicant respectfully submits that as amended, claim 28 clearly claims the invention that Applicant regards as the invention. Withdrawal of the rejection is respectfully requested.

Rejections under 35 U.S.C. §103

Applicants respectfully traverse the rejection of claims 1-4, 6, 8, 14, 16, 25-27 and 34-40 under 35 U.S.C. §103(a) as allegedly being unpatentable over Shankara (WO 99/47180; hereinafter “Shankara”), Dechecci, *et al.* (*Journal of Virology*, 2001; hereinafter, “Dechecci”) and Huang, *et al.* (*Journal of Virology*, 1999; hereinafter “Huang”). The recent U.S. Supreme Court decision in the *KSR International v. Teleflex Inc.* (82 USPQ2d 1385), modified the standard for establishing a *prima facie* case of obviousness. Under the *KSR* rule, three basic criteria are considered. First, some suggestion or motivation to modify a reference or to combine the teachings of multiple references still has to be shown. Second, the combination has to suggest a reasonable expectation of success. Third, the prior art reference or combination has to teach or suggest all of the recited claim limitations. Factors such as the general state of the art

and common sense may be considered when determining the feasibility of modifying and/or combining references.

The Office Action alleges that Shankara teaches the generation of a recombinant Ad2 (a subgroup C adenovirus) with a heterologous fiber protein or a chimeric fiber protein with heterologous portions from Ad17 (a subgroup D adenovirus). Shankara allegedly teaches that upon replacing all of the Ad2 fiber protein except for the first 16 N-terminal amino acids with the complementing regions of Ad17 fiber proteins, dendritic cell targeting increased greater than 10-fold. As a result, Shankara allegedly suggests that the fiber of subgroup D adenoviruses permits the targeting of dendritic cells. Shankara also allegedly teaches the development of recombinant Adenovirus 5 with a heterologous fiber protein from Adenovirus 2. However, the Office indicates that Shankara fails to disclose the use of Ad37 fiber protein segments; or the lack of HSP interaction by the recombinant adenovirus.

The Office Action relies upon Dechecci for allegedly teaching the involvement of adenovirus 2 and 5 fibers for infecting cells that contain heparin sulfate glycoaminoglycans (components of HSP). The Office concludes that changes made to these proteins or their replacement could alter binding to HSP. Finally, the Office Action relies upon Huang for teaching the generation of recombinant Ad37 fiber proteins for determining how amino acid mutations can alter the cellular tropism of the fiber protein.

According to the Office Action, one of skill in the art would have been motivated to create a recombinant Ad5 with a fiber protein containing either all or a portion of the fiber protein from Ad37, thereby targeting dendritic cells and generating a recombinant adenovirus with a fiber protein that has a reduced interaction with HSP because Shankara suggested that Ad2 (a C adenovirus) with a fiber protein from Ad17 (a D adenovirus) increases the targeting of dendritic cells.

Applicants respectfully submit that while Shankara shows that Ad2 with a fiber protein from Ad17 does increase targeting of dendritic cells, the remainder of the chimeric adenoviral

vectors tested by Shankara actually showed similar or decreased infectivity as compared to the Ad2/Ad5 controls (see Table 2 of Shankara). Thus, while Shankara may have suggested that “subgroup D viruses infect dendritic cells by at least 2-3 logs more efficiently than subgroup C viruses” (Shankara, page 29), one of skill in the art would not have extrapolated such a statement to predict the infectivity of chimeric adenoviral vectors in view of the results shown in Table 2 of Shankara. In fact, Shankara concludes with the statement that the “chimeric Ad vector with Ad17 fiber sequences infects DC very efficiently,” while “[a]ll other vectors gave more or less the same percentage of transduced cells.” (Shankara, page 33).

Accordingly, without acquiescing to the reasoning offered by the Office, and in order to expedite prosecution of the instant application, Applicant has amended claim 1 recite wherein the subgroup D adenovirus is selected from the group consisting of adenovirus serotype 19p, 30, and 37, all of which displayed enhanced infectivity of dendritic cells. (See paragraph [0503] of the published application (US Pub. No. 2008/0124360)). Applicant submits that one of skill in the art, in view of Shankara, Dechecci, and Huang would not have been motivated to select the specifically claimed subgroup D adenoviruses that exhibit enhanced infectivity to arrive at the claimed invention. Even if one of skill in the art would have combined Shankara, Dechecci, and Huang, the resulting composition would not result in adenovirus particles since none of the cited references provide any guidance or suggestion to select those subgroup D viral fiber proteins that result in enhanced infectivity.

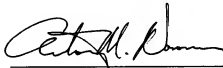
As such, the teachings of Shankara, Dechecci, and Huang do not teach or suggest all of the recited claim limitations, do not supply a motivation to combine the cited references, and do not provide an expectation of success in achieving the claimed invention. Accordingly, Applicant respectfully submits that a *prima facie* case of obviousness has not been established for the claimed invention, and requests withdrawal of the rejection.

CONCLUSION

In view of the amendments and above remarks, it is submitted that the claims are in condition for allowance, and a notice to that effect is respectfully requested. The Examiner is invited to contact Applicant's undersigned representative if there are any questions relating to this application.

The Commissioner is hereby authorized to charge \$650.00 as payment for the Petition for the Two-Month Extension of Time fee (\$245) and the Request for Continued Examination fee (\$405) to Deposit Account No. 07-1896. No other fees are believed to be due in connection with the filing of this paper. However, the Commissioner is hereby authorized to charge any fees that may be required by this paper, or credit any overpayment to Deposit Account No. 07-1896 referencing the above-identified Attorney Docket Number.

Respectfully submitted,



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